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HENRY V. POOR, Editor.

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Saturday, March 10, 1849.

☞ Our friends who have not already forwarded the amount of their subscription for the current year, will please remit the same to us by mail.

To Engineers and Contractors.

A suggestion was thrown out in the Journal of the 13th of January last, under advice of a valued friend, as to the expediency of publishing a list of engineers and contractors, with the public works upon which they are engaged, charging a sum per annum for each name. This would give the members of the profession an opportunity to know where their brethren are engaged, and their address; also where an engineer can find an old well-known contractor, should he be in want of a good man to do some important piece of work; and where, too, good assistants could be found. Since then, several friends have added their testimony in favor of the plan. We have commenced the list in the present number of the Journal.

There is no doubt that great convenience to some, and profit to others, will result from the constant publication of such a list of engineers and contractors, on the different lines of railroad, and especially to those out of, but *desiring*, *employment*. We therefore insert the names of engineers, contractors, draughtsmen and others in responsible positions on railroads, and in machine shops, for *two dollars* per annum to subscribers, and for *five dollars* to all parties not taking the Journal.

In a few instances we have taken the liberty of inserting the names of friends who have been for years subscribers to the paper, and from whom we have received no reply to the suggestion. Will our friends please examine the list, and express to us their wishes should they desire any change in it.

Railway Progress.

Continued from page 129.

In extending our observations upon Railroads in progress, in the southern and western States, we find more difficulty in satisfying our minds from the fact that the larger number of undertakings are of comparatively recent date. The history and the experience of the past show that the most sanguine minds of this day are hardly aware of the difficulties to be encountered upon a long line, before it can reach its final completion. There is a strong determination on the minds of the capitalists and business men of the country against all speculative railway schemes, and are increasing a disposition to withhold support from new projects till the amount of capital necessary to their completion is in some way made certain.

The experience of the Reading railroad, and some other similar enterprises, show that the safety of the capitalist is found in the fact, that the cost of the road is represented by the share capital. Indebtedness of any sort is found to be a hindrance to the success of every enterprise, however well the interest is secured by a surplus of receipts over expenses. Every effort should therefore be made to secure the capital stock by the sale of shares, rather than resort to expedients by the hiring of money.

The long lines of projected roads at the south and west must, to ensure their success, be urged forward only so far and fast as the share capital can be called in.

Commencing at favorable terminating points, the roads should be brought into use by short stages and finished as they progress. A steady perseverance in this line of policy will bring rapidly into use all the spare capital of the country, and the returning dividends will soon give the necessary confidence to the capitalists of other portions of the Union; and in a very few years the Mississippi valley will be tapped at several points, and its business distributed to the several Atlantic cities, now eagerly struggling for this great prize.

Maryland is destined ere long to realise the great object of her ambition, by the completion of the *Baltimore and Ohio railroad* to the navigable waters of the Ohio river, but we do not hear that any further distance will be opened the present year.

The *York and Cumberland* railroad seems likely to be soon entered upon, and though within the limits of the State of Pensylvania, is an enterprise of the city of Baltimore; and the distance from York to Harrisburg, — miles, has only to be finished to give to Baltimore a share in the trade arriving th ough the Pennsylvaia canals, or over her great Central railroad to Harrisburg.

Virginia has only to adopt the line of policy indicated in the admirable letter of *Peter Clark, Esq.*, published in this Journal under date of January 6, 1849, to become one of the greatest, if not the greatest State of the whole Union. The enterprise of Maryland, of New York, or of Massachusetts, wot ld have placed the city of Norfolk along side of Baltimore or Boston.

A railway from Norfolk to the Ohio river, on the most favorable route, would command more business than any route yet opened, or attempted by any Atlantic city to secure the trade of the west. We cannot learn, however, that there is any ground to expect any more railway openings in Virginia during the present year, though the *Louisa* railroad seems likely to be put in progress, and the Lynchburg and Tennessee railroad is reported to be under contract, as is also the *Richmond and Danville* railroad, as will be seen by their advertisement in this Journal.

North Carolina.—The *Wilmington* (N. C.) and *Manchester* (S. C.) railroad, 160 miles in length, 100 of which are in the latter State, is just commenced upon. A small portion of the distance in South Carolina was put under contract in December last. In another portion of this day's paper, in "Railway Connections," we allude to this route as the grand link that is now wanted to fill up the line between Maine and New Orleans.

The *North Carolina Central* railroad, alluded to in our last issue, is soon to be put in progress.

The *Charlotte and South Carolina* railroad, from Charlotte (N. C.) to Camden, is 110 miles in length —runs about 12 miles in North Carolina. About 90 miles from Camden is under contract, in the State of South Carolina.

The *Greenville and Columbia* railroad, 160 miles in length, is now in progress—and 126 miles are

under contract. This line will be eventually extended to the Tennessee river.

South Carolina is extending her great trunk lines northerly, in the direction of Wilmington, Fayetteville and Charlotte in North Carolina, and southwest into Georgia and Tennessee. The city of Charleston is now exhibiting a degree of energy and forecast unexampled by any other city in the Union, and seems in a fair way of becoming a rival of New Orleans for the trade of the upper portions of the Mississippi valley.

To be continued.

Arrival of the America.

This steamer reached Halifax March 8, and her news was immediately forwarded by express and telegraph. It is very favorable, and important in a commercial point of view.

There continues a good demand for American security. U. S. Six per Cents. continue in demand on the continent, and orders for the stock have been executed at 106¼. Money continues to get more abundant, and the rate of interest rules low. The English funds have receded. Consols in London on the 23d, 92⅞ to 93¼.

Cotton.—There has been a further advance in cotton, with immense sale, 270,065 bags having changed hands within the last four weeks. The quotations are—4¾d. Uplands, 4¾d. Mobile, 5d. New Orleans.

The Grain Market.—The Grain market is dull, with the following quotations:—American and Canadian white wheat, 7s. 2d. a 7s. 4d.; red do., 6s. 6d. a 6s. 8d. Flour—Western canal and Richmond, 26s. a 26s. 6d.; Philadelphia and Baltimore, 26s. 6d. a 29s.; New Orleans and Ohio, 26s. a 27s.; Canadian, 25s. 6d. a 26s. 6d.; do., sour, 25s. a 26s.

The Iron Trade, Feb. 24.—With regard to iron, the demand continues large, and prices improve.—We quote present prices in Liverpool:—Merchant bar, £6 per ton; best bar, £8; hoops, £8 10s.; sheets, £9; Scotch pig, nett cash, £8 5s.

The Great Western Railway Company of Illinois.

We have before us the Bill which has recently passed the Legislature of Illinois, confirming and amending the Charter of the Great Western Railway Company. The bill authorizes the completion of the road commenced by that State, running from Cairo to the terminus of the Illinois and Michigan Canal, at Peru, and from thence to Galena and to Chicago. This charter is the most liberal and peculiar in its character. Among the important features are, that "The right of way which the State may have obtained, together with all the work and surveying done at the expense of the State, and all materials connected with said road, (including an expenditure of over one million of dollars), is granted to said Company; and the Governor of the State is required to hold *in trust*, for the use and benefit of said railroad, whatever lands may be donated or otherwise secured to the State of Illinois by the general government, to aid in the completion of the road from Cairo to Chicago." as this charter is given to the President and Directors of the Cairo City Company, and their successors in office. No shares are to be issued for the creation of capital therefrom. The bill provides that—

The capital or funds which may be required and are necessary from time to time for the objects authorised by this act, shall be obtained by the sale of bonds or obligations, to be issued in the name of and upon the sole security of the whole property, estate, and income of the Great Western Railway Company, and which indebtedness may be made payable at such times and places, and with such rates of interest, and in such form and manner, as the directors of the said company for the time being shall deem most proper and expedient: *Provided*, That no obligations issued by the company for loans shall be considered or deemed a lien upon or secured by the income or property of the company, unless such indebtedness shall be signed by the president and treasurer of the company, and its corporate seal affixed thereto, and countersigned by the president and treasurer of the Cairo City and Canal Company, and also certified thereon that it is recorded in the office of register of deeds for Alexander county, Illinois; the number, by whom signed, when and where due, the rate of interest, date and amount of all such indebtedness, shall be entered in a separate record book kept for that purpose; and upon payment by the company of obligations thus signed, sealed, and recorded, they shall be returned to the said register's office and cancelled, which shall be evidence of the payment thereof.

As security for the payment of principal and interest of all bonds and obligations issued conformably to the preceding section, the whole net income of all rents and tolls derivable from the road, works, buildings, lands, and other property of the company, shall be, and are hereby declared to be, specially held pledged, and irrevocably secured to the holders of the said bonds or obligations of the company, against the claim or claims of all other parties, until the principal and interest of all such indebtedness shall be fully paid, according to the terms of the loan; and the surplus income of the company, after providing for the annual interest upon these loans, shall be invested as a sinking fund in the Government stock of the United States, or it may be applied to the liquidation of the indebtedness of the company.

Whenever the said company shall have paid and discharged all its obligations and indebtedness, assumed or entered into under the provisions of this act, that then and forever thereafter the said company shall be held to pay to the treasurer of the State of Illinois, for the use of the State, one-fourth of the whole nett income annually received from the road herein authorised to be made: *Provided*, That no Legislature shall, at any time hereafter, so reduce the tolls as to produce less than twelve per cent. nett per annum upon the cost of said road, without the consent of said company.

Thus leaving three-fourths of the nett annual income of the road to be expended (after the cost of same, as above provided, shall have been paid) to the protection and improvement of the "Cairo City Property."

The great value and importance of this road to Illinois, and the country generally, is ably set forth in a memorial from the citizens of that State to Congress.

From the mouth of the Ohio to the Illinois river the road is to run nearly in the centre of the State, and through a region distant from the Mississippi and Illinois rivers on the west, and the Ohio and Wabash Rivers on the east. A new outlet to market will thus be opened to an extensive agricultural region, now filling up with a hardy and industrious population. Moreover, the navigation of the rivers, above the junction of the Ohio and Mississippi, is more or less obstructed every year by low water and by ice, in consequence of which the upper country is shut out during a portion of the summer and winter from the Southern markets; whereas this road, commencing at the confluence of the Ohio and Mississippi rivers, where they are never frozen over, will afford to an extensive range of country uninterrupted access to perpetual steamboat navigation. The scope of its usefulness in that respect will be greatly enlarged by the extension of the road to the mineral region in the northern part of the State and in Wisconsin, and by finishing the cross roads already partially constructed from the Illinois river, through Jacksonville, Springfield, Decatur, and Danville, to connect with the Wabash and Erie Canal in the valley of the Wabash. In this connection it will afford, while the navigation of the lakes is unobstructed, a choice of markets to almost the entire State of Illinois, the way being open, as well by the Illinois and Michigan canal and upper lakes, as by the Wabash and Erie, the New York canals, the Hudson river, and the Western railway, to New York and Boston, and the numerous intermediate cities and towns.

In the same degree will this improvement facilitate the importation of foreign and domestic goods into the interior of Illinois from New Orleans on the south, and New York and Boston on the east—thus reducing the prices to the people, while it increases their means of payment.

To the travel as well as to the trade of the country, this railroad is destined to be of the utmost consequence. To its termination, at the mouth of the Ohio, the navigation from New Orleans, in the largest and most commodious steamboats, is always open. On the north, it is destined not only to reach the territory of Wisconsin, but, connecting with the Illinois and Michigan canal on the one hand, and the Wabash and Erie canal on the other, it will form, with existing improvements, a connected route for the travel, in steamboats, railroad cars and canal boats, between New Orleans, New York, and Boston, and the immediate points with which they are connected by similar improvements. From desire of change, many travellers will at all times take this route from and to the mouth of the Ohio; and when the navigation of the rivers above the mouth becomes uncertain, from low water in summer, all the through-going as well as the local travel will make this route, as will also the local travel when the rivers are obstructed by ice. Already does a large portion of the travel from the Southwestern section of the Union to the cities of the watering places of the North go by way of the lakes; and the completion of this improvement, increasing its comfort and lessening the time occupied, will greatly increase the proportion of those who, for comfort, health, and pleasure, will prefer a northern route. Nor is the time distant when those who seek relief from the discomforts and diseases of the summer in the Southwest will divide their attention between the existing watering places of New York and Virginia, and new establishments to spring up on the waters of the great lakes and the upper Mississippi, to which this road will at the proper season, afford the only direct, certain, and comfortable means of access. In fine, although it will not prevent trade and travel upon the rivers at all convenient seasons, it will form the only connecting link in the North for *uninterrupted* trade and travel between vast regions, embracing half the present population of our Republic. By the construction of branch roads to Alton, St. Louis, and other points on the Mississippi, its advantages will be still further extended; and should Michigan push her railroads across the isthmus and around the south end of Lake Michigan, a connection will undoubtedly be formed with those improvements, to the mutual advantages of both parties.

A glance at the map, and the route of the road running through the centre of the State nearly its whole length from south to north, must convince even the unreasoning of its vast importance to the people as a local improvement. It may be compared to a new river opened through the State, superior to the Mississippi and Illinois, or the Ohio and Wabash, because always navigable, and free from the malaria, so fatal to human life, which their waters sometimes engender. It will give to a long range of high prairie country more than the advantages of river bottom lands, without their unhealthiness. It will immediately add to the value of real property within reach of the road to many times the amount of its cost, and, in the permanent market afforded for the products of the soil, open an inexhaustible mine of wealth to the citizens and the State. The whole amount of what was public lands in the State of Illinois, according to the report of the Commissioners of the General Land Office, exceeds thirty-five millions of acres, and of them there remains unsold at this time more than fifteen millions of acres. These lands in general are among the best farming lands in the world, and they remain vacant only because of their distance from navigable waters, and their being, in a measure, destitute of fuel and timber. The railroad will at the same time open a market to them, and bring them timber for building and fencing from the forests on the lower part of the line, and coal for fuel from the inexhaustible beds in the same region. The effect will be not only to bring these lands into market, and promote their settlement, but to tripple or quadruple the value both of the located and those now unlocated, adding immensely to the wealth of the State, and to her means of raising a

revenue. And the same effect will be produced upon the routes of all branch roads which may be constructed to the right and left, whether to Alton, St. Louis, and other points on the Mississippi, or to Shawneetown, Terre Haute, Covington, or other points on the Ohio and the Wabash.

The commanding position of the terminus of this Railroad at Cairo, and the certainty of its final completion, has already induced the formation of other companies, to connect with the mouth of the Ohio, viz.: one from Charleston, via Nashville; another from Mobile directly. It is also contemplated to make a road from Norfolk, Virginia, to Knoxville, thence to unite with the Charleston and Nashville Road; the great object of this line of road being to open the most direct, expeditious, and cheap, inland communication with the valley of the Mississippi and the Western States.

We understand that arrangements are making to place the management of the Company under such organization as will both secure the confidence of the public, and thereby the *capital* necessary for the immediate commencement, and the rapid progress of this great work.

In conclusion the charter provides that—

All lands that may come into the possession of the said company, whether by donation or purchase, and which are not required for the use, security, or construction of the road herein authorised to be made, shall be sold by the company within five years from and after the completion of said road, otherwise all lands not sold shall revert to and become vested in the State of Illinois: *Provided*, That, until said lands are sold, they shall be, and are hereby, declared pledged, held, mortgaged, as security for the payment of the bonds and obligations of the company, authorised to be issued under and in conformity with the provisions of this act; and the proceeds of said lands, whenever sold, shall be wholly applied to the payment of the indebtedness of the said company, and for no other purpose whatever.

The Iron Manufacture:

British and American, in 1849.

On considering the prospects of the iron manufacture, as depending upon the future range of prices of iron in Great Britain, and particularly as dependent upon the prices in Scotland, which is the country now so directly the scene of competion with the iron manufacture in the United States, we are of opinion that certain very decisive views may be obtained from the annual statements of the business of the river Clyde, which documents for the year 1848, have recently been received in the United States.

From these statements it appears that the total quantity of iron manufactured in Scotland, amounted to no less than 600,000 tons in the year 1848.—This shows an increase of 60,000 over the manufacture of 1847, and shows, also, the remarkable circumstance that the manufacture, which was only in infancy within the last ten years, in Scotland, has risen from 44,000 tons in the year 1838, to 600,000 tons in the late year of 1848. Thus is one quarter of all the iron made in the world, now seem to be manufactured in Scotland, in the short period which has passed since the discovery of the black band iron ore, with the simultaneous invention and the application of the hot blast.

We next find in these tables of the production of iron in Scotland, that the exports of pig iron to the United States have been 90,235 tons for the year 1848. This is an increase of 45,242 tons on the quantity exported to this market in 1847, and of 76,337 tons on the quantity for 1846, in which year only 13,918 tons were received from the Clyde.

During the same period it is estimated that of bar iron considerably above 100,000 tons were received from Wales—the railway iron alone, having been 67,000 tons in the year 1848. Altogether about 25 per cent. of all the iron consumed in the United States, is thus shown to have been furnished by the iron manufacturers of the British Islands—nor is it a subject of surprise that smelting furnaces, rolling mills, and foundries should have been closing in rapid succession, in all parts of the United States, throughout the whole of the year 1848.

For, it is not asserted by those conversant with the iron interests of Pennsylvania, that any power of competition exists here, against the prices of iron arriving from Scotland and Wales, and it becomes an inquiry of vital importance, in how far this importation of British iron may be destined to increase or to diminish in the course of the year 1849.

Many persons have been expressing the opinion that the arrivals of Scotch iron must soon cease, by reason of the known and undoubted loss which has resulted from its manufacture at the prices of the year 1848. The average price in the Clyde has been £2 2s. 4d. per ton, and this price is 7s. 10d. sterling below the known cost of production of iron at even the best situated works in Scotland, where £2 10s. is the lowest price at which mixed numbers can be sold in the Clyde. But notwithstanding this loss of capital on the operations of the year in Scotland, there are reasons for supposing that the manufacture of iron will not be discontinued from that cause—but on the other hand, that the quantity to arrive in the American markets, may be even greater in the present than the preceding year.

For, the iron manufactured on the Clyde is almost all exported to foreign countries, only the comparatively small quantity of 30,000 tons having been manufactured into bars in Scotland in any one year. The larger portion of this iron is consumed in the manufacturing districts of England, or is sent to France, Germany, and other countries of Europe, or to the East Indies and the South American States. The increase of demand in these markets is therefore requisite to the cessation of the *forced* exportations to the markets of the U. S.

But the state of business in the manufacturing districts of England, it is to be apprehended, has revived in only a slight, and probably a merely transient degree, so far as the latest accounts enable a judgment to be formed of the state of affairs in the European States. Increased confidence appears to have prevailed in the London Money Market, and a stimulus had been communicated to the general manufacturing system of Great Britain—but new revolutionary movements appear to be probable in Paris, and a renewal of depression of business in England, would almost inevitably follow a renewal of political troubles in France. The rise in the prices of iron, which is reported by the Europa steamship, amounts to but little more than the advance which has been reported in the months of December and January, and which has never failed to be again lost, on the arrival of the next steamship, if bringing intelligence of a renewal of troubles of a political kind.

One of the principal causes of the depressed prices of iron in Great Britain is in the excessive increase of the manufacture during the last ten years. The premature extension of the English railway system, in the years 1835, '36, and '37, led to the erection of great numbers of furnaces and rolling mills on the calculation of inexhaustible supplies of iron being required for these undertakings, but this has proved to be a widely over-estimated calculation, and the leading railway lines of Great Britain being now generally completed, and the revolutionary state of Europe being unfavorable to these peaceful undertakings, the quantity of iron for railways has most extensively decreased, and the present depression in the manufacture is chiefly owing to that circumstance, in combination with the general shock to all credit and manufacturing operations, as following the European political troubles of the late year of 1848.

For, not only has the consumption of iron decreased in Great Britain, in the last year, but the exports from the Clyde alone, are given in these tables, as decreased by the large quantity of 64,000 tons to Germany and France alone. In the midst of this falling off in the European demand for iron, it is to be apprehended that the manufacturers will be compelled to continue to *force* the markets of the United States.

We now come to inquire into the circumstances under which the iron manufacturers of Scotland thus continue their operation under a large and decided loss of money in the year, and why the quantity made at this rate of loss of capital, has increased in the year 1848, and may be expected to continue to increase in the present year, notwithstanding this disastrous state of the iron manufacture of the Clyde.

The leading difference between the manufacture of iron in Great Britain and in the United States, consists in the Royalties or the annual rent of mineral lands, which is a charge entering into the cost of production very much more heavily in Great Britain than in this comparatively new and more extensive region of iron ore, and of limestone and coal.

The royalties in South Wales enter at the rate of 8s. sterling into the cost of a ton of pig iron, in Staffordshire at the rate of 8s. 9d. per ton, and in Scotland, some of the leases of the land containing the black band iron ore, have been taken at the rate of fourteen guineas per acre, which is considerably higher than the royalties either in Staffordshire or Wates.

It therefore follows that an iron manufacturer in Scotland cannot suspend his operations, without the loss of the entire annual rental of his mineral lands, and which amounts to about twenty per cent. upon the whole value of the pig iron at the present rate of £2 2s. 4d. per ton. Then the delapidation of buildings, machinery, with the loss of interest upon the capital invested in the business, all are additional inducements to the continuation of furnaces in blast, and it is always considered better to be prepared for any immediate benefit to arise from a change of times.

But whilst the British iron manufacturer is under the disadvantage of high royalties for his minerals, he possesses the great counteracting advantages of labor at prices very far below the wages which prevail in the iron manufactures of the United States. Reduction of wages are made until workmen can only exist with strength sufficient to perform the labors of the day—on the unfortunate laborer the burthen never failing to fall in all feudal countries of the world, and as the wages of labor compose almost all the rest of the expenses of the iron manufacture, after the royalties are paid, it is in the low rate of wages that the advantage is so much greater to the manufacturer of iron in Great Britain than to his competitor here in the United States

For, at this time the average wages in Great Britain are, for colliers, 11s. to 12s. sterling per week, exclusive of powder and candles; fillers 15 to 16s. per week; refiners, 20s.; puddlers, 20s.; assistant puddlers, 10 to 12s.; rollers, 18 to 20s.; founders, 16 to 17s. per week, and these are full rates, and for first rate men.

Such rates of wages are two-thirds below the rates which are, or ever have been, or ever can be practicable in any part of the United States. For in the British islands, the laborer is a prisoner in a small expanse of country, he cannot wander far from the place of his usual employment, and must submit to any wages which may be offered in times of depression of trade. But in Pennsylvania, the iron ore digger, or the collier, or the filler of the furnace, can cross over the Allegheny mountains, and find the wages of agricultural labor in the boundless regions of the Western States. To retain laborers at reduced wages will ever be found impossible in Pennsylvania, and wages will probably be two-thirds lower in Scotland, or in Staffordshire, or in Wales, than in the average of the United States.

The immediate consequences to be expected from the opposition of Scotland and Great Britain, generally, with its population of unpaid laborers, is, that Pennsylvania can have no real prospect of prosperity for its staple manufacture, so long as the state of prices remain without a wide alteration in Europe. The latest report from the iron districts of Scotland, is to the date of February 10th, which gives the reason of the late advance of prices, that "large orders for iron had been received from the United States," &c. Thus our own market is the means of superceding still further the home production of iron, and this process will undoubtedly go forward without any limitation to the importation of pig iron from Scotland, so far as circumstances now can be foreseen for a long period to come. The manufacturer of iron in Pennsylvania cannot forget that in Scotland there is furnace power for the production of 650,000 tons of pig iron in this year, and that the state of the European and other markets, renders too probable the arrival of the greater part of this British iron, in the already over flooded markets of the United States.

Connected with this important subject, we extract the following from the London Mining Journal of February 3, 1849;

* * "Next we find railway property, with the exception of a few lines, in a state approaching to bankruptcy, without traffic—without funds—and many of its shareholders already more than half ruined. In place of projecting new lines, funds cannot be found to complete the half of those begun. It is, therefore, very evident that there will not be much time, in session 1849, taken up with the consideration of bills for new lines. From these causes, combined with the general depression of trade, the iron founders and machine makers are all but idle —not a few of them entirely so: nor do they see any prospect of a speedy improvement, No one will deny that this is *the actual state of matters*—nor do we think it likely that even the most sanguine among the high-priced pig iron theorists will be courageous enough to attempt to draw a parallel between the prospects of the trade in the years 1844-5, and that of 1849, with any hope of success. Do the facts above stated justify any speculation in Scotch pig iron, or any advance on its present price of 48s. 6d. per ton? The following particulars may assist parties who have viewed the course of the market since Christmas last as natural, to answer the question with more satisfaction than they have at present the means of doing.

We have already stated the production and stock in 1844, we will now give that of 1848. The production was 600,000 tons. at a cost of 40s. to 45s. per ton, and the stock Dec. 31 not less than 110,000 tons; the latter has accumulated at this date to *at least* 130,000 tons, and will increase in the same ratio for the next two months, if not longer. By the end of June there is every probability the stock at Glasgow will amount to somewhere about 200,000 tons, in addition to which, be it remembered, a very large quantity is stored in England for sale. The following will be found, on the closest calculation, to be a very moderate view of approximate make, consumption. shipments, and stock, for 1849, viz.:

Stock 31st Dec., 1848.....Tons..	110,000
Make in 1849.....	650,000—760,000
Shipments—United States, America, equal to 1848, (which was double 1847, the latter being triple 1846).....	90,000
All other foreign ports, say equal to 1848.....	72,000
Coastwise.....	227,000
Local consumption for all purposes.	170,000—559,000
Leaving as stock, 31st Dec., 1849..	201,000

These statements will bear investigation, and are calculated to serve as a caution to those who expect to make a fortune in the article at the present price, and prevent shipwreck on the sand which engulphed so many votaries in the speculation in Scotch pig iron in 1845-46.—*Philadelphia Commercial List*

SCIENTIFIC.

On the Formation of Coal.

The ash of coal contains no alkalies, but only silica, alumina, and the oxide of iron. This proves that the alkalies, such as potash, originally in the wood, must have been removed and carried off by water when the wood was in a liquified state.

The coal formation rests upon the old red sandstone; and, as the old red sandstone possesses the first fossil remains of animal life, so the coal formation presents us with the first fossil remains of vegetable life. Coal is therefore the first production, or the first series of vegetable formation, which were as primitive in their form, as we find the animals were in the first attempts of creative power in their kingdom.

In respect, therefore, to the alkali not being found in coal, we must either conform to what we have said above, or come to the conclusion that the primitive vegetables had no alkali in them. In peat, we find no traces of potash; but this may be owing to the long maceration that it has undergone in lying up in its bog state.

If iron be the coloring matter of coal, then iron will always be found in coal; and such is the fact. Iron may be said to have its primary, secondary, and tertiary states. We find it in its first state in ferruginous granite; secondly, in the old red sandstone, in trap rocks, basalt, &c.; and thirdly, deposited with carbonaceous and aluminous matter. The first stage presents us, we say, with the origin of iron; the second, with the progress it has made, or the first step for a useful developement of its qualities; and in the third and last place, we see that end accomplished. It appears to have been one principal cause of the formation of coal. It has been made to undergo all these mutations to produce this important end. For when the earth arrived at that primitive state, that it could give birth to vegetable substances, such as would be proper for the formation of coal, iron was required to form that coal. Such were the arrangements of the Great Chemist, that he had provided for the requisite supply of iron in this great laboratory, that the moment it was required it should be at hand. No sooner is the quantity of vegetable matter sufficient by its accumulation than a layer of iron supervenes and forms over it a roof, which, whilst it thus renders the coal imperishable, it also, by the wisest forethought, so arranges its position, that it is rendered easily workable by man in times far remote from its construction. As in all other wonders of nature, we see here the foreknowledge of the Great Architect.

But there are other substances found in coal: these are arsenic and sulphur. We have said there are no alkalies; but we name this again, because it is impossible to conceive the notion that any vegetable substance is without alkali. If coal was formed from vegetable substances, then the operation of converting such substances into coal must have dedeprived these substances of all alkalies, and thus we obtain two results as inevitable consequences. 1st, The wood must have been in a state of partial decomposition and liquifaction in order to part with the alkali; and 2d, Water must have been present to edulcorate the matter, otherwise the alkali would be found in coal. But sulphur and arsenic are found in coal. These two articles are the greatest mineralizing substances that we have, and they are the articles to which coal is indebted for its crystalline form, as in many other minerals. Coal might, therefore, be called, in one state of its formation, partly a bisulphured of carbon, mixed with an arseniate of potash, the alkali being so far retained in this state of progress. Probably the arsenic acid was originally arsenous acid; for, taking the wood as we find the constituents of oak, we should have C35 H20 O20, whilst, if we take splint coal, we have C24 H13 O0. The great departure of oxygen from the coal may be accounted for by its transportation to the arsenous acid, making it into arsenic acid—arsenic acid being As x 50; whilst arsenous acid is As x 30. We may thus see in this a probable mode by which the wood lost its oxygen. We do know that by the action of heat and water the alkali and arsenic would disappear,* and scarcely leave a trace behind them. During this action we have the precise moment when the coal made or took up its crystalline form. Further, at this time the oxygen of the wood might supply the sulphur in like manner, and make it into sulphuric acid, and thus the minerals, such as the iron, which we find in coals, would be made into a sulphuret. Such results as these are not hypothetical, but bounded by true chemical principles; they are therefore facts, contingent upon the matters and substances themselves, and are consequent upon their union under the apparent circumstances under which they have met together. How the sulphur and arsenic became present, it is not our province now to consider; but that they were present, and in large quantities, although so small a portion is now apparent in them, is also a fact, because they are there still, as the remainder or remnants of an operation performed.

It is chemically true, that wood, iron, sulphur, arsenic, properly set to work, in their behaviour under proper and fitting circumstances, would form crystelline coal; nor would it be difficult to form coal from such an admixture in an artificial manner. That nature has done it by proper chemical action is evident—she acts by no other rule. Such laws are therefore the rules to be pursued in imitating her. We can make carburet of iron, which is indeed coal, only it has a maximum quantity of iron; and to make carburet of iron with a minimum quantity of iron is indeed to make coal, the whole matter being only a matter of degree.

* Arsenic is found very abundantly in the strata immediately above the coal.

Ammonia Destructive to Leather.—Amonical emanations from manure in stables are most pernicious to leather, it being rendered quite brittle and useless in a very short period; consequently, harness ought never be allowed to hang up in stables.

Wrought Iron Cofferdam.—Last month the experiments undertaken by Mr. Brunel, at the instance of the Admiralty, for carrying the railway bridge across at Saltash, for the Cornwall Railway, were brought to a successful close. For the purpose two old gun-brigs, purchased of the government, were moored over the spot, and a wrought-iron cylinder, of ⅜ inch boiler plates, strongly rivetted together, 85 feet high, and 6 feet diameter, and of 28 tons weight, was sunk *in profundis*. The necessary apparatus for pumping out the water was then applied, and the experimenters, who afterwards descended to the bottom of the cylinder, had the satisfaction of finding that at 11 or 12 feet below the mud, there was a foundation of solid rock for the piers. The bridge will be of large dimensions, the Admiralty requiring that it shall have a clear width of 300 feet between the piers, and a clear height of 180 feet above high-water mark. Over it will pass the entire passenger traffic from Plymouth to the Land's End.—*London Civil Engineer.*

Peat Charcoal, prepared on the principle patented by Mr. Jasper Rogers, is a complete disinfectant when applied to offensive matter, the noxious effluvia being entirely destroyed by it. A manufactory for it has been erected in the forest of Dartmoor. It is cut out in cubes of 8 to 10 inches diameter, and immediately carried to a powerful press, where it is reduced about two-thirds in bulk, and nearly deprived of its water. It is then loaded in the trucks, and is conveyed to the works, where it is boiled in a mixture of coal-tar, pitch, peat naphta and other hydrocarbons. After saturation and drainage, the peat is fit for charging the retorts, composed of fire-clay, 9 feet long, and 5 feet in diameter, holding two tons of saturated peat each, and capable, when in full operation, of working 8 tons each in 24 hours. The gaseous products from these retorts pass much after the mode adopted in ordinary coal-gas works, along a hydraulic main, and through a long set of condensers, whence, after being deprived of all its concensable adjuncts, the purified gas is brought, by means of pipes, beneath the retorts, where it serves as a very powerful fuel. The condensed matter from the peat contains an immense proportion of stearine or vegetable tallow, oil and naptha. When the retorts are discharged, the charge requires to be drawn into a close iron chest on wheels, with a tightly fitting lid, which must be immerged in water, as the charcoal retains its heat for a very long time; and if quenched with water, as is the case with gas-coke, it imbibes so much of that fluid as very materially to deteriorate its quality. The extraordinary effects it has had upon smiths' work in particular, chiefly from the total absence of sulphur—has been such, that it has acquired the concurrent testimony of several intelligent smiths. The absence of clinker at the nozzle of the bellows, the perfect freedom from scale on the iron, so that an iron horse-shoe looks like one of steel, and that delicate instrument, the weaver's pick, when broken, is wedded together with ease.—*Ibid.*

Valuable Products of Peat.—At a recent meeting of the Royal Society, for the promotion and improvement of the growth of flax in Ire and (the Marquis of Downshire in the Chair), Mr. Owen, of London, referred to a discovery which his friend Dr. Hodges, would say, was worthy of the deepest consideration of every one present. Having heard, some time since, that from peat there could be produced ammonia, naptha, soda ash, oil, spermaceti, and some other substances, he left London for Paris, and called on an eminent chemist there. He had been previously speaking on the subject with a Mr. Reece, also an eminent chemist, who told him that for the expense of 30*l*., he could produce from 100 lb. of peat, chemical results to the value of 148*l*. It was Mr. Reece who referred him to the Paris chemist, and when he (Mr Owen) produced to the Paris chemist the statement of Mr. Reece, as to what he could do with the peat, the former assured him (Mr. Owen) that he could really do all

that he had stated in the document. He then rang a bell, and ordered the results of his experiments to be brought up from his own laboratory, and then he (Mr. Owen) saw with his own eyes the sperm candles made, the ammonia, the oil, and the soda ash produced from peat: and the chemist thought this was the greatest discovery of the age, and one which would evidently convert the greatest obstacle to improvement into the greatest blessings, and double the fertility of the soil, to an extent that none could estimate. Well, he (Mr. Owen) being a man of business, declined to take any of these statements for granted, and consequently he had got a great number of experiments made by Dr. Hodges and his friend Mr. Reece, which were entirely confirmatory of all the statements made by his friend Mr. Reece. But still, not to deceive himself or others, he was determined to have an experiment made on a large scale, and had employed the largest apparatus in use for that purpose; and he rejoiced to tell this meeting that his great experiments had commenced, and the results were beyond all expectations for everything had succeeded to his utmost wishes. Mr. Owen here handed to the Chairman a sample of the spermaceti so prepared by him, which was minutely examined by his lordship, and a great number of other gentlemen in the room. He came there as a friend of Ireland, and he would return to England in a few days highly gratified with the result of this meeting, and with his love and admiration of Ireland greatly increased. It was expected that, according to Mr. Reece's system, they might be able to work 100 tons of peat per day; this would, in a short time, clear the land of the peat, and thus produce one of the greatest possible blessings to Ireland, in clearing the land, and making it fit for agricultural purposes.—The Chairman said that peat was of considerable value in the north of Ireland, but in the south it was going to waste.—*Ibid.*

Conway Tubular Bridge.—The deflection which lately took place at the testing of the second tube over the river Conway, by Captain Symonds, the government inspector, was very slight, and the result is stated to be highly satisfatory. Before any of the testing weights were drawn into the tunnel, it was ascertained that the deflection then existing was 1·86 inch. The testing ballast amounting to 235 tons, 14 cwt., 2 qrs., caused an additional deflection of 1·56 inch only, thereby showing that, with the whole of the above superimposed weight, the departure from a straight line was only to the extent of 3·42 inch. The load having been withdrawn, in less than ten minutes the whole structure regained its former deflection. The variation in the adjoining tube, which has now been in use for so many months, does not, it is reported, extend even to the 1·16 part of an inch.—*Ibid.*

Suspension Bridge at Pesth.—The Pesth Suspension Bridge, which is erected over the Danube, at Pesth, was commenced in 1840, according to the designs, and under the direction of William Tierney Clark, civil engineer, and has just been completed at a cost of £650,000. The bridge, which for magnitude of design and beauty of proportions, stands first among suspension bridges, has a clear waterway of 1250 feet, the centre span or opening being 670 feet. The height of the suspension towers from the foundation is 200 feet, being founded in 50 feet of water. The sectional area of the suspending chains is 520 square inches of wrought iron, and the total weight of the same, 1,300 tons. This is the first permanent bridge since the time of the Romans, which has been erected over the Danube below Vienna, it having been considered impossible to fix the foundations in so rapid a river, subject to such extensive floods, and exposed to the enormous force of the ice in the winter season. It now, however, stands as another monument of the skill and perseverance of our countrymen. The bridge was opened for the first time, not to an ordinary public, but to a retreating army on the 5th of January, 1849, by which the stability of the structure was put to the most severe test, which cannot be better described than by referring to a letter of a correspondent, who writes—"First came the Hungarians in full retreat and the greatest disorder, hotly pursued by the victorious Imperialists; squadrons of cavalry and artillery in full gollop, backed by thousands of infantry—in fact, the whole platform was one mass of moving soldiers; and during the first two days, 70,000 Imperial troops, with 270 pieces of cannon passed over the bridge." This fact cannot but be of importance to the scientific world, since it proves that suspension bridges, when properly constructed and trussed according to the design of Mr. Clark, may be erected in the most exposed places, while their cost in comparison with stone bridges is insignificant.—*Ibid.*

How the Mechanical Virtue of Fuel is Estimated and Expressed.

1. In explaining the mechanical effects of steam, it has been already shown that whatever be the purpose to which the force of a steam-engine be applied, its effect may always be represented by a certain weight raised a certain height. 2. Whether an engine be employed to drive a mill-wheel, to propel a ship, or to draw a carriage, the tension or resistance to be encountered at the working point may be universally represented by an equivalent weight. 3 Thus it is easily understood, if a locomotive engine draws a train of carriages, that the tension of the chain which connects the engine with the train will be the same as if the same chain, in a vertical position, had a certain weight suspended to it; and the same will be true, whatever be the nature of the resistance to the moving power, or the manner in which this moving power may be applied. 4 It has been usual also to express the mechanical efficacy by the number of pounds raised one foot; for whatever be the resistance, and whatever be the space through which the moving power acts upon it, the effect can always be reduced, as has been already explained to an equivalent number of pounds raised one foot. 5. The mechanical duty of coal, thus explained and applied to a steam-engine, has been technically called the *duty of the fuel.* Thus, a bushel of coal consumed in the furnace of an engine will enable such engine to exert at the working point a mechanical effect equivalent to a certain number of pounds raised one foot high; the effect is the duty of the fuel, or as is sometimes said, the duty of the engine. 6. The duty of the engine is therefore not the entire mechanical effect developed by the fuel in producing evaporation; for a portion of the mechanical power of the steam evolved in the boiler, and in some cases a very large portion of it is expended in moving the machinery of the engine itself; all such portion intercepted, therefore, between the furnaces and is the working point. The duty, properly speaking, is the net mechanical force developed by the steam, or such portion only which is available for the work to which the engine is applied. 7. The duty of engines varies within very wide limits, according to the purpose to which they are applied. In this respect, engines may be reduced to three classes:—1st, Such as are used in the mining districts of Cornwall, where the economy of fuel is pushed to its extreme limit; 2dly, The stationary engines used in the manufactories generally, in which class may also be included marine engines; 3dly, Locomotive engines on railways. 8. In the Cornish engines, where alone very accurate observations are made on the mechanical effect produced, and on the economy of fuel, it has been found in some cases, that by the combustion of a bushel of coals, an effect has been produced by the engine equivalent to 125 millions of pounds, or what is the same, 62000 tons raised a foot high. This however is not to be understood as an average result. In producing it, the utmost care was taken to guard against every source of waste of power. 9. The more common duty obtained from a well-managed engine used in the mining districts has been from 80 to 90 millions of pounds, or at the rate of one million of pounds raised one foot for every pound of coal consumed—a result remarkable enough in itself, and easily remembered. 10. In the ordinary stationary engines belonging to the second class, where the same scrupulous attention to economy cannot be or is not paid, the duty, according to the commonly received estimate, is, in round numbers, about 20 millions of pounds for a bushel of coal, being four times less than that of the good Cornish engines, and six times less than the duty which has in certain cases been obtained. 11. In the locomotive engines worked on railways, the economy of fuel is of course still less; but in this application of the engine the economy of fuel becomes a consideration so subordinate, that it need not be enlarged on here. 12. The great economy obtained in the engines used in Cornwall is the result of a variety of contrivances, some of which, such as the protection of the machinery from radiation, have been already mentioned. The boilers are constructed of extraordinary magnitude, in proportion to the power expected from them; the furnace is of proportionate size; the combustion is slow; the heating surface is very extensive, and the intensity of heat upon it very slight; the flues are of great length, and the heated air is not permitted to escape until the last available portion of heat has been extracted from it; the fuel is managed in the furnaces with the most extreme care, and combustion being perfect. Added to this the steam is used at a pressure of from 35 to 50 lbs. per square inch above the pressure of the atmosphere, and the expansive principle extensively applied. 13. In giving these last estimates of the duty of fuel in the engines used in the manufactures generally, it is right to observe, that owing partly to the difficulty of ascertaining the actual mechanical effect produced, and partly to the negligence of proprietors of engines, the estimates of duty are of the most loose and inaccurate description. When an engine is applied, as is generally the case in Cornwall, directly to the elevation of water or other heavy matter, it is easy to observe the mechanical effect it produces; but when an engine is applied to give motion to the works of a factory, to drive spinning-frames, power-looms, or printing-presses, it is not so easy a matter to reduce the effect it produces to an equivalent weight raised a given height. In the case of locomotive engines the same difficulty ought not to exist; yet it is surprising that, until a very recent period, errors the most monstrous prevailed respecting the real mechanical effect produced by these machines. It was, for example, long assumed as a maxim, that the resistance offered by a given train of carriages to a locomotive engine was independant of the speed, or in other words, the same at all speeds. This error was not brought to light until the year 1838, when it was demonstrated, by a series of experiments conducted by me, that the resistence was augmented in a very high ratio with the speed—*Dr. Lardner's Rudimentary Treatise on the Steam Engine.*

We commend to the careful attention of our readers the account of the life and character of George Stephenson, the great *Prophet* of Railways, which appears in our present number, as one of the most useful and interesting pieces of biography that we ever met with. Its length obliged us to exclude other matter, for which our readers will be more than compensated by the interest it possesses.

The Life and Character of Geo. Stephenson.

BY J. SCOTT RUSSELL, ESQ.

It will be recorded that about the middle of the nineteenth century locomotives first began to run upon railways, and that George Stevenson, the President of the Institution of Mechanical Engineers, was the man to whose original genius chiefly, the world was indebted for the discovery. It is difficult for us, to whom the terms railway and locomotive are household words—to us who live, move and have our being, among railways and their manifest social results—to go back again, even in imagination, to the beginning of the last twenty years when we were without them. So fast, indeed, we may be said to have lived through those twenty years; so much we have been able to travel over, and see, and learn, and do, that it seems longer to go back over these twenty years, than over centuries of the slower times that went before. We, who have this day come our hundreds of miles to this meeting,* and may still have to return hundreds of miles to our homes this night, will find it hard to believe in the records of perils, privations and delays, which, but a few years ago, made a journey from Newcastle to Birmingham one of those serious undertakings in life which were anticipated with apprehension, and recollected with congratulation. We now do more work, and see more society, acquire more knowledge, by personal observation in one day of railway life, than we were wont to do in weeks of "the good old time." It will be necessary, however, to task our imaginations, and go back to the times before

* Institution of Mechanical Engineers.

Stephenson, in order duly to appreciate the full value of the benefits which his labors have conferred upon us.

It is not, however, alone, with what George Stephenson *did* that we are concerned; still more important it is for us to consider what George Stephenson *was*. His title to our gratitude is no doubt great; but his claim to our admiration as a man is still greater. As a plain laboring workman, we first find him distinguished by his untiring industry, by his zeal for the interests of his employers, and by his steadiness, sobriety and honesty. We next find him, after having mastered all the details and drudgery of his business, continually on the watch for improvements, cultivating habits of accurate observation, and spending every leisure moment in classifying and comparing the results of his own observation, and in deducing from them hints for future improvement. Did an accident occur in his mine, his whole thoughts were immediately directed to the means of preventing its recurrence. His business, in the humble capacity of a brakesman, took him casually to the vicinity of a condensing steam engine where the property of his master, through ignorance and mis-management, was in danger of suffering serious damage. The young brakesman had already carefully studied the nature of its parts, and thought over the principles of its construction; the regular engineer had been baffled in his remedies, and despaired of a cure; but the youthful brakesman confided in the strength of his conviction, and boldly undertook the task of refitting the machine; the stubborn engine became at once, in his hands, obedient and useful; he had discovered for himself the secrets of the steam engine; and at five and twenty the young coal worker had become a mechanical engineer.

Thus early were the results of his self-education manifest. He had mastered the discoveries of Watt. It is true, indeed, his whole life had been one of discovery; but as yet he had discovered no more than those who had gone before him. His had been the best of all education—the education which a truth-loving mind, working its way among dead matter, and wrestling with the laws of nature, receives directly from nature itself—an education far more profound and prolific than words, books or lectures can ever impart. He had learned the laws of nature at first hand, and by experience; he new partial y what the true properties of matter were; he felt that what they were, was exactly what they ought to have been; and however indefinitively he might be able to give reasons to others for his belief, yet one of the most valuable results of his practical self education was to give him that implicit confidence in his own right understanding of nature, which carried him so boldly through the herculean undertakings of his future life. The whole first years of his early life were, in this way, one continued chain of discovery. Who can tell the pleasure, or weigh the profit, which such an education bestows on the simple and correct student—compared to the formality of written dissertations, and the dryness of second hand knowledge?

As yet, we have said he discovered nothing new; but he was now on the eve of making a discovery, the reputation of which has enobled the name of one of our greatest chemical philosophers. A mechanic, James Watt, had already anticipated the philosophers Cavendish and Lavoisier in the analysis of water; and another was now about to anticipate Sir Humphrey Davy in the invention of the safety lamp.

That Stephenson was the original inventor of the safety lamp is now happily beyond doubt. Like most other inventions which seem to make their appearance in several places simultaneously, at the moment when the want of them has come to be deeply and generally felt, the safety lamp seems to have started into being nearly at the same moment in London and Newcastle. Stephenson and Davy had both discovered the principle on which they proposed to proceed, before either had made the lamp; *but Stephenson's was made and used the first.* That Stephenson first invented the lamp admits of no doubt, however much the question may remain as to how far Davy may not also be entitled to the merit of equal originality; priority to Stephenson no one can justly lay claim.

It is as a professional engineer and a practical mechanic that we here have chiefly entrusted to us to do justice to the memory of our distinguished president. But we should do violent injustice to our own feelings, if we were to pass altogether without notice his social character and private life. It is well for us all to recollect, that mere eminence as mechanics, or mechanical inventors, is not enough in the social world to make us either command the love or respect of our fellows. It is as men, chiefly, that we respect one another; it is moral character and social virtue for which we chiefly love each other. It has, indeed, been remarked by some, on the character of our profession, that the continual struggle with tough, hard, and refractory substances which form the business of the engineer, has the effect of communicating a hardness of character, an obstinacy of disposition, and a rigidity of temper, to men of our craft, which does not add to their excellence as members of society. It must be remembered, however, as a palliative for such faults, where they exist, that every inventor is at first in a minority of one; all the rest of the world is, for the time, against him; and it is often only by a long and hard fight that he at last succeeds in converting his minority into a majority.

Invention is, therefore, a battle with the world; and it is not always easy for the inventor again to consider with complacency his enemies in the field, and to adopt them as his companions in the closet. The antagonism between the inventive man and the sceptical world is apt to extend itself to the social state. But Stephenson was, happily for himself and the rest of the world, a man endowed with no common share of the feelings which make the intercourse of life useful to himself and delightful to his friends. His energies had been sufficient to carry him through much opposition without cooling the ardour of his affections, originally warm and genial, and, above all, without chilling the enthusiasm, or closing the openness of disposition, which characterised the sanguine youth. In his latter days he was distinguished for the childlike simplicity of his character, for the transparency of his intentions, for the singleness of his purpose, and for the straightforward manly honesty of his conversation and dealings. If he could hate an enemy, he never masked his antipathy by hypocrisy; but he was a warm and earnest friend.

Greatly, however, as Stephenson's name will continue to be distinguished among us as the inventor of the safety-lamp, and as a youthful mechanic of wonderful shrewdness and sagacity, it is as the first constructor and chief inventor of locomotives and railways that he will be known to posterity. It is in this capacity that he has conferred on society blessings which are rapidly extending to the widest limits of civilization, and which already cover Europe and one half of America. The introduction of railways is the great distinguished event of the thirty years' peace, and to them must principally be atributed the strong bonds of amity which are continually drawing nations closer and closer together. It is to railways, and the unity of international interests arising from them, that we are indebted for the maintenance of that peace, unbroken for thirty years, and for the very remarkable events we are now witnessing in the existence of a *casus belli* in the heart of Europe, and yet of the invincible reluctance of the great powers to supply the fuel for a general war. The peace of Europe will now, we may trust, by the progress of railways, and the consequent multiplication of intercourse, be rendered as substantial as the peace of the nations of the heptarchy of England; for we have nearly reached that part of railway intercourse, when the capitals of different nations of Europe are not separated so far from one another, either in the length of time, or in the rarity and peril of intercourse, as were the five capitals of the Anglo-Saxon kingdoms of our ancesters; Canterbury, York and Gloucester were then more distant than are now London, Berlin and Vienna.

How all this was early brought about, how much George Stephenson had to do with it, is now too familiar to every mind to need repetition. You all know how he early got permission from Lord Ravensworth and the proprietors of Killingworth collieries to make an iron substitute for the horses that drew his coal wagons; how he succeeded in driving teams of wagons some six miles an hour; but all of you who recollect the hugh unwieldy looking monsters of that early time, and especially those who, like myself, then had to do with them, must remember how little we dreamed of seeing these clumsy affairs go 10 or 20, much less 50 or 60 miles an hour. Indeed, whether we look at the railway or machine, both would have been smashed to pieces, had any force accelerated their speed to 10 miles an hour. It was never dreamed of, except by one dreamer, who believed in 10, 20, 50 and 100 miles an hour, and who had recently determined to reach it.

The two inventions which have been combined to produce the modern railway system, may be said to be the malleable iron rails and the locomotive engine. These were the two elements of high velocity—each of which formed the absolute condition of the existence of the other. Without the system of laying a continuous wrought iron rail, the notion of a velocity of 50 miles an hour could not have been entertained; and without the locomotive engine, such an expensive line could never have proved remunerative. Most of us can remember when the idea of laying wrought iron bars of 50, 70 or 90 pounds weight per yard, for continuous miles, was an expense so utterly beyond the conception of the time as not to be entertained for a moment; and this for an obvious reason, that no particular amount of traffic would have paid for it. I think I am warranted in saying, that no amount of traffic which horses, merely, could convey along a line of modern railway could yield a remunerative return, unless, perhaps, under peculiar circumstances, which are exceptional; I am therefore, I think, safe in saying, that the wrought iron railroad was essentially dependent on the locomotive engine. But that the modern locomotive engine could not subsist without the wrought iron rail, and its multifarious appendages of chairs, keys, locks, sleepers, switches, crossings, sidings, and turntables, is too evident to need proof. Without the smoothness of the rail, the engine would be jolted to pieces, and without the easy motion which it gives, the engine could not be made to draw a sufficiently profitable load to pay; and, further, unless made of wrought iron, it would be impossible to attain the high speed of the locomotive without imminent danger. It therefore appears that the continuous wrought iron railway and the locomotive engine were inventions intimately related to each other, and each a condition of the other's success. To Stephenson we are indebted for the chief features of improvement in both. It was the joint perfection of the road and the engine which created the Liverpool and Manchester line, and all the progeny of that wonderful and gigantic experiment—an experiment whose complete success now bears incontrovertible testimony to the genius of the man.

There are several lessons which the life of Stephenson should enforce upon us, the members of a profession which he advanced, and of a society which he so materially assisted in founding, and in the promotion of which he took a constant and deep interest. Indeed we cannot cast even a hasty glance back over the events of his life, without perceiving that the foundation of our society was an act most appropriate to the termination of a career so arduous and successful. Let us endeavor to define some of those objects, and then consider how we can best accomplish them.

In the first place, then, one of the great objects of our society is the encouragement of mechanical invention, and the promotion of scientific improvement. Thus it becomes our duty to supply to this generation a great want, chiefly felt by Stephenson in his earliest career. The unhappy moments of his youth were those in which his inventions encountered the opposition of prejudice and interest, and when his propositions were decried, because of their very originality—because they were new, strange, unheard of, and therefore contrary to verified opinion. What he wanted and could not find in his youth, this society presents to the youthful genius of his generation an enlighted, unprejudiced, and first ordeal, where every youthful inventor, every mechanic of original talent, every proposer of that which is new and promises to be useful, will find a body of experienced practical men, to whom the country looks up as her wisest sons, ready and willing to listen to the plans, to test the proposals, to weigh the value, and to award the praise and approbation to which the rising Stephensons of this generation may aspire; but which the

old Stephenson could no where find, and in the want of which he was compelled to expend many years of vigor and energy in obscurity and penury. Let us see that in our hands no youthful genius, however little known, shall find his genius obscured, or his energies discouraged, eclipsed, or extinguished. If I rightly interpret the feelings of this society, they would hail with welcome any discovery, and co-operate heartily and disinterestedly in giving to the world its benefit, and to genius its honors and rewards.

Another circumstance must have greatly impaired the means of usefulness of Stephenson in his early life, and one that he most deeply felt—viz., the want of knowing that which other men were doing, and had done before him, in subjects allied to those in which he was occupying his mind. Thus much we know with certainty, that no man was more happy to communicate, in after-life, to others, the abundant stores of practical knowledge he had accumulated, and that no one felt a more kindly interest in the inventions and plans of younger men, or was more disposed to promote their interest and forward their views. Let us regard it as a part of his legacy so to impart, liberally, to all younger members of the profession, what more knowledge or greater experience may have enabled us to acquire. After all, there is no tribute more gratifying to the members of our profession, than the due appreciation by each other of that which each of us may have done to advance the interests, and increase the resources, of mechanical sciences.

It would not be fair to the character of our late president to omit from our recollection the very large and original views which he entertained on general science. It has been too common in our profession to place science and practice in opposition to one another, as if true science and hard practice could be possibly opposed. If science means that which is carefully ascertained, and accurately defined. and truly demonstrated, then it is impossible that any sound practice can possibly stand in opposition to or independent of it. If practice means the knowledge which is founded on the actual facts and experience of intelligent men, it is impossible to see how the largest amount of that knowledge possessed by any one man, can differ from the extensive and generalised facts in which science embodies the experience of all mankind. Stephenson is an example of a remarkable freedom from this prejudice. He was eminently a practical man. He wrought early, and much, with his own hands. He had wrestled matter and knew all its qualities by feeling it, and pushing it, and pulling it—by cuting, and filing, and chipping it. He had hammered it hot and hammered it cold—he had melted it and moulded it, planed it and sawn it, broke it across, pulled it asunder, and twisted it round. He knew its action and its reaction, its inertia and its momentum, its *vis mortua*, and its *vis una*. His was supremely practical and personal acquaintance with the laws, and property, and phenomena natural to matter, whether solid or liquid, fluid or gaseous, mineral or ærial, more than any man who has ever risen to eminence. Stephenson was entitled to rank as a consummately practical man. But was he not equally, or more, a scientific than a practical engineer? Was there a bolder theorist than he was? Were there ever more daring scientific speculations than those wild flights in which his genus delighted to break forth? On chemistry, vegetable physiology, vital mechanism, electricity, galvanism, the theories of gases, on the inert constitution of matter and of heat, and even on the mechanism of the mind itself, he had deeply thought, propoundedly read, and boldly and fearlessly speculated. Every step in his life was the realisation of what had before been a theory. It is trne he was not educated early in the rudiments of science, at school or at college; but what of life? what is life but a great school? Is not the press our school, and necessity our school of invention? Stephenson read and studied science; —he was not ignorant, but he was selt-taught. Before he became a great man he had studied profoundly; and he does not appear to have ventured on any construction or invention, before having accurately, and generally truly, calculated, by the principles of science, its probable and actual results. In all his works, Stephenson exhibits to us embodiments, eminently practical, of the profoundest principles of mechanical science. Let the men among us who desire to emulate him most, endeavor to combine, in the greatest degree, the truest science with the soundest practical science. These are not times in which any of us can afford to dispense with any science, or any practice, that it may be in his power to obtain.

I will now venture upon an illustration of the advantage of uniting high science with extensive practice, which has often occurred to me as an excellent illustration of Mr. Stephenson's scientific knowledge, and also an illustration of the advantage he would have derived, as a practical man, from having been still more profundedly scientific than he was. Stephenson, we know, invented the fish-bellied rail, and a great invention it was thought in its day. The Liverpool and Manchester railway was opened with it. It was an invention to give, with a small addition of metal to the under middle size of the rail, nearly double the strength; and this it successfully accomplished. But here he stopped short: he had not science enough to see, that by making the wrought-iron bar in long lengths, stretching over a number of blocks, or sleepers, he had brought it into a new condition, to which a much higher rule was applicable;—he neglected the difference between a rail having a joint at every chair, and one having only a joint at every fifth or sixth chair; had he perceived that, he would have invented the parallel rail, and would have learned that the joint cars require to be nearer together than those removed from the joint by a fixed proportion. The fish-bellied rail was a failure. It was the result of science; but of science of which there was not enough. It was also the result of practice; but of practice under different conditions. It was reserved for Mr. Buck, a profoundedly scientific pupil of Stephenson's, to develope the true science of the wrought-iron rail. Where not a little science had failed, a little more made the invention perfect. Let us learn from this to be always trying to obtain a little more science, as well as a little more practice, than we have got,—remembering that Stephenson continued his education of himself to his dying day.

The best testimony, however, which Mr. Stephenson has borne to the value of scientific education to a practical man, is to be found in the course he adopted for the training of his own son to our profession. The assiduity with which he labored at clock-making, the cleaning of watches, or any other industry, in the intervals of his regular business, in order that he might be able to afford to him those blessings of education of which he himself so deeply felt the want, is one of the most charming features of his character. His most ernest desire, in early difficulty, was to give Robert all those precious thoughts and truths which he himself only acquired late and too laboriously. And how admirably his plan succeeded, his son's unclouded success, both as a mechanical and civil engineer, are the evidence to us, as indeed they were the subject of just pride to himself, who never spoke of his son without strong emotions of joy and pride. There are none of us who will question either the justice of his pride, or the soundness of his plan of education.

It is one of the peculiarities of genius to inspire those within its influence with some of its own fire. This was peculiarly the case with Stephenson. Nearly all the present ornaments of our profession have been his pupils. He was the founder of a school of eminent engineers, who in England, Europe and India, and are now extending, amongst all portions of the human race, the blessings of those great bonds of civilization and social intercourse which he first fabricated. It is to his labors, and theirs, that this country owes the addition of £200,000,000 to its productive wealth, the opening up of a host of new branches of industry, the quickening and invigorating influence of rapid and cheap intercourse; and to him that the poor everywhere owe the blessings of cheapened coal, and the facilities of social enjoyment and healthful recreation.

In this brief notice of the chief features and character of our late president, which I have thus imperfectly, although most earnestly, sketched amid the bustle of business, I have dwelt mainly upon such features and characteristics as were peculiarly interesting or instructive to us, as members of an institution founded, in a great measure by himself, for professional purposes. I have regarded, therefore, chiefly his professional character; but I cannot conclude without expressing an earnest wish that his life as a man, exhibiting the beauty and excellence of his character in all its cheering aspects, as a boy, as a workman, as an engine-man, as a viewer, as an engine-builder, as an improver of mineral railways, as the engineer of the Liverpool and Manchester railway, should be written by some one who has leisure to collect, from his many friends, all their recollections of him, while they remain fresh and accessible. I should desire also to see a detailed account given of his progress, his difficulties, and his means of success in any one of his labors. This would be a most valuable and instructive work, and I do not know on whom it should devolve more properly, to see such a work executed faithfully and judiciously, than on this society, whom he made the favored recipients of his knowledge and experience, and who ought to consider themselves as his literary and scientific executors, to whom the world may naturally look to see justice done to the memory of one of England's greatest men, the founder of our railway system, and of the Institution of Mechanical Engineers.

Pacific Rail-road.

A great meeting has been held in St. Louis in favor of the Rail-road from the Mississippi to the Pacific, at which the Mayor of the city, Hon. John M. Kume, presided. The following gentlemen were appointed a Committee on Resolutions, viz:—Thos. Allen, N. Ramsay, Robt. Campbell, D. H. Armstrong, —— Harvey, T. B. Hudson, John Simonds, A. B. Chambers, M. Blair, Charles Kemble and J. B. Crook.

Resolved, That the bill introduced into the Senate of the United States by the Hon. THOMAS H. BENTON, to provide for the location and construction of a National Central Highway from the city of St. Louis, on the Mississippi river, to the Bay of San Francisco, on the Pacific Ocean, is hailed with lively interest and satisfaction by the people of St. Louis, as embodying one of the grandest conceptions of great and beneficial statesmanship, and of comprehensive and enlightened patriotism.

Resolved, That in view of the vast *Territories* of the United States lying between the Mississippi River and the Pacific Ocean, and with reference as well to the developement of their immeasurable resources, as to the purposes of efficient government and the perpetuity of union, and looking also to the invaluable commerce of the Northwest Coast. the Pacific Islands and the seas, and the East Indies, a NATIONAL CENTRAL HIGHWAY, of the character alluded to, across the continent, is a work worthy of the Nation, as tending in the greatest degree to promote the grandeur, strength, durability and glory of the Republic.

Resolved, That inasmuch as the projected rail-roads of the United States, now approaching a system, seem to converge from many different and cardinal points to this city, and as it is also nearly the cenire of navigation by running waters, and in the chosen and natural pathway of the emigrant to the West, propriety, economy and deference to the natural laws of trade, and movements of population seem to approve the choice of the city of St. Louis as a fit point of departure or terminus of the projected road.

Resolved, That the Senators and Representatives of St. Louis in the General Assembly of the State be respectfully requested to make their best exertions to procure from the Government of our state the immediate tender to the Government of the United States the RIGHT OF WAY for such a road as above described through the State of Missouri, upon any route which the proper authorities of the United States may select, as, in their judgment, the most practicable.

Resolved, That the Senators and Representatives of St. Louis in the General Assembly of the State be respectfully requested to urge the passage of a resolution by which the united and favorable judgment of that body, in behalf of the projected highway, may be made known to the government of the United States, and especially to the Senators and Representatives of Missouri in Congress.

Resolved, That we tender to our honorable Senator, *Pater Senatus*, who by his latest and greatest measure, has added new lustre to his own high

name, and reflected additional honor upon the state he represents, the assurance of our cordial and undivided approbation and support, and that we shall look with lively hope to see his resolute exertions continued, until the great commerce of the Pacific and of the Atlantic shall meet each other in the Valley of the Garden and Granary of the World.

Resolved, That the proceedings of this meeting be published in the city papers, and that copies thereof be transmitted by the Chairman and Secretary to the President of the United States, and to our Senators and Representatives in Congress, and to the Governor of this State, and to our Senators and Representatives in the General Assembly.

Resolved, That the thanks of this meeting be tendered to Col. Charles A. Fremont for his intrepid perseverance and valuable scientific explorations in the regions of the Rocky and California Mountains, by which we have been furnished with knowledge of the Passes and altitudes of those mountains, and are now able to judge of the entire practicability of constructing a railroad of them from St. Louis to San Francisco, in California; and that the officers of this meeting be requested to furnish Mrs. Fremont, (Col. Fremont being in California,) with a copy of these proceedings.

All of which were unanimously adopted. The construction of a Railroad to the Pacific, is to be one of the great and absorbing questions which is to occupy the attention of our people, and we are happy to record an early movement in its favor in the right quarter.

AMERICAN RAILROAD JOURNAL.

Saturday, March 10, 1849.

The Past and Future.

We believe that the first part of the nineteenth century will stand out in the page of the future as one of those remarkable epochs in which, under the influence of some grand idea, or by the aid of some new agent, the human mind receives one of those great impulses which stand out as land marks in its progress. It seems to be the order of Providence in the education of the race, that when it has reached that state in which the past fulfilled its mission, and accomplished all it can toward this progress, a new revelation is vouchsafed which carries him one step further in his march of improvement. Some of the most remarkable of those epochs have been the invention of letters, and the art of printing, and the discovery of the magnetic needle. Man heretofore has been mainly occupied in releasing his mind from the bondage in which it has been held by his ignorance of the laws of physical nature, by the study and unfolding of those laws, and he has now reached that point in which the forces that reside in matter are placed in his control, and enable him, to the eye of the uneducated, to wield the attributes of a superior order of beings.

By the application of the powers of steam and electro-magnetism to the arts of life, the present age will be signalised by a more rapid change in the order of society, and the progress of the race, than any former one. We are bidding adieu to that period in which the highest powers that man has thus far employed in the execution of the most important schemes that concern life, beside in muscles of flesh, and ushering in one in which the forces that govern matter, infinite from their very nature, are to be the agents of his will.

In this new order of things, we may expect results corresponding to the magnitude of the causes at work. By means of these new agents under his control, man already, as far as his own planet is concerned, enjoys a sort of omnipresence. His ideas, through the medium of electricity, reach a person one hundred miles distant quicker than thro' the medium of his voice in the same room. By steam power all the various products of the earth are rapidly, and with trifling expense, centred in the same spot. Under these influences the old relations of society are rapidly disappearing, and new ones are taking their place. Tradition is fast losing its power over the mind of man. Respect paid to pre-eminence of station, founded upon the great qualities of our ancestor, and by virtue of which alone, society has awarded the same to his successor, is giving place to respect for individual excellence. The learned professions, as they are termed, are fast losing that reverence and respect, and those emoluments they once commanded, and are ceasing to be considered the most desirable fields for the young man entering upon an active life. A knowledge of the physical sciences, and the laws of nature, are now a more certain path to wealth and station than the most accurate and critical knowledge of "the traditions of men." How is this new movement, which is doing so much for the physical and intellectual wants of man, affecting his moral nature? Is this keeping pace with his intellectual progress? Far from it, we fear. That it must, in the final result, elevate and give supremacy to his moral nature, is certain, because this is the object and end of all progress; but the intellectual always outstrips the moral. This is the order of Providence, and we have Divine authority for saying, "first the natural, then the spiritual."

Wabash and Erie Canal.

It appears by a circular recently issued from the office of the Wabash and Erie Canal Company, that three important divisions of the Canal, embracing a little over 16 miles of the main line, (from Coal Creek to Newberry) the estimated aggregate cost of which was $790,171 51, have been completed, or are under contract for completion, at an actual aggregate cost of $781,719 77. There are now employed 1250 laborers, and an effective force, equal to 1780 men on the entire line from Coal Creek to point Commerce. The force south of Terre Haute is 850 men, and an effective force equal to 1215 men. The Erie Canal of New York is 363 miles in length. The Wabash and Erie Canal, when finished to the Ohio River, will be 375 miles in length, in Indiana, and including the eastern end of it which lies in the State of Ohio, will be 459 miles in length from Toledo to Evansville, the longest canal in the United States. The second instalment to the advance of $800,000 was payable on the 1st day of February, 1849, and by order of the Board, the third and final instalment is required to be paid on the 1st day of July, 1849.

To the Readers of the Railroad Journal.

Our readers, and particularly our friends, who advertise in the Journal, will feel gratified that it now appears in a new type and on better paper than at the commencement of the year. These changes, together with the removal of the office from Philadelphia to New York, and the change of editor and proprietorship, has prevented us from bringing out the paper on the day of publication. Besides this annoyance, several typographical errors have been suffered to go uncorrected, from the hurry of our compositors and pressmen, in a portion of the copies, in one or two instances. A similar apology will not, we trust, be again necessary as the work is now brought up square with the time.

We particularly regret some typographical errors in the number of Feb. 3, in our article on the Price of Iron, for we perceive that the article is copied without credit, errors and all, in the recent March number of Hunt's Merchant's Magazine.

Tennessee and Georgia Railway.

The Hiwasse Railway, otherwise known as the East Tennessee and Georgia Railway from its southern terminus to Knoxville, Tennessee, as we understand, is in progress of construction under a contract by which the contractors are to receive $1,850,009—$1,150,000 in stock in the road, $200,000 in bonds of the State of Tennessee, and $700,000 in the bonds of the company, or cash at their option. This does not include the bridge over the Tennessee River, which is otherwise provided for.

Railroads in the United States.

We are indebted to Col. John McRae, Engineer of the South Carolina Railroad, since our last issue, for more full details than we have before been able to procure, of the progress of railways in the Southern States.

He gives the length of line of the Camden Branch of the South Carolina Railroad as 37 miles, instead of 21 miles, embranching from the South Carolina Railroad, 105 miles from Charleston and 24 miles from Columbia.

This gives us an aggregate of railways in actual operation, March 1, 1849, of 6,556 miles, within the United States. Estimating their cost at $30,000 per mile, they represent on aggregate capital of $196,680,000.

The *Railway Record*, of London, will please to note the facts here given. The learned Editor, Mr. Robertson, in a very satisfactory manner, alluded to the vague estimates put forth by some of the American papers, representing the amount of capital expended upon Railways in the United States at $1,000,000,000, at the close of the year 1848. It is gratifying to see that the railway system of this country is well understood by the intelligent public of Great Britain.

Railway Connections.

As it is not within the scope of the General Government to construct any system of internal improvement in the shape of Railways, for the purpose of facilitating commerce, all the enterprises originate with the several States, and have for their primary object the advantage of the State that originates them. They are usually constructed to connect important points, or accommodate the business of a particular section. But the trade and commerce of the country being entirely independent of State lines requires for its convenience a system of railways coextensive with, and adapted to, the wants of the whole country, and this influence is gradually moulding the independent and apparently capricious legislation of the several States into order and symmetry, and uniting these various systems into one harmonious whole.

These connections are opening a new era in the value and usefulness of railroads. When the roads of the different States shall be united, the iron rail will become another electric wire through which any persons upon a line of railway in the most remote part of the country can touch every section of the Union. The manufacturer in the extreme north can forward his products directly to his southern or western consumer, and thus, as it were, possess a constant market at his own door. And in turn, the southern and western planter and farmer, can distribute their agricultural products among their northern consumers, as they are wanted, without being interrupted as they now are by the unnavigable state of the rivers from ice in the winter, or droughts in the summer.

These connections are rapidly going on. The New York and New Haven road, which has jus t

been completed, has united the railroads of New England and the Middle States. The vast amount of travel which passes over this road shows the importance of this connection. Over it, as a trunk line, the New York merchant and manufacturer may now forward, direct to his customer, in almost any part of New England, without breaking bulk, and receive in return the products of that section. The completion of the Hudson River road will open a direct connection with the roads of Central New York and the Lakes. Pennsylvania is busily engaged in connecting her extensive system of internal improvements with those of Ohio, and Ohio is uniting herself with those of the States still further west. In the south, the Wilmington road is being extended to the South Carolina roads. Her roads are connected with those of Georgia, and this latter State is extending her railways to a navigable point on the Chattahooche, with a view of ultimate extension to Mobile and New Orleans. In two years from this time there will be a line of railway from Maine to steamboat navigation on the Chattahooche—affording a continuous inland route of railroad and river navigation from Portland to New Orleans, with the exception of a short distance along the Gulf of Mexico. Charleston will soon unite herself with Cairo, at the Junction of the Ohio and Mississippi, by means of the road which is now in construction through Tennessee, and Mobile is also connecting herself with the same point. From Cairo a road will soon be constructed north to Chicago on lake Michigan, which is to be intersected at various points by the great lines running east and west, thro' Ohio, Indiana and Illinois. Thus with no other principle than the laws of trade and the local interest of the different sections, the Union is being fast bound together with these iron bands; and every road in the country, the most insignificant and remote, is becoming more valuable from every dollar that is expended upon the roads with which it is connected, and every additional mile of railway constructed enlarges the sphere of usefulness of those already built. All engaged in this work are co-laborers together for the good of the whole.

It is impossible but that the best results should follow from thus uniting together the various parts of the country—results, the value of which are not to be measured by the ordinary standards of dollars and cents, but the higher one of social and intellectual progress. It will introduce different sections of the country to each other, and secure uniformity of ideas, views and interests; and when men come to understand one another, mutual confidence and good will succeed that suspicion and distrust which universally attends to a state of unacquaintance and isolation; and thus all engaged in this work of railway construction are fulfilling a double mission, and advancing the intellectual and moral as well as the physical good of their fellow men.

Hudson River Railroad.

The readiness with which the loan of $500,000, required for the prosecution of this work, was taken is a gratifying evidence of the confidence felt in the road, so important to the city of New York. Its completion at the earliest practicable moment is now rendered certain. The road has been constructed in view to the formidable rivals it must encounter in parallel lines of road on one side, and a navigable river on the other. From its superiority to all other roads in the country, in its grades and curves, as well as being the shortest route to Albany, it will, we think, successfully compete with all the other lines of communication in the summer time. In the winter its superiority to all other routes must be apparent. The following are the takers of the Hudson River railroad loan of $500,000. It is understood that 1 per cent. was allowed on the bids:

Peter Lorillard,	$30,000	J. Boorman,	$100,000
J. Davis Wolf,	30,000	G. G. Howland,	20,000
W. A. Spencer,	15,000	Japeth Bishop,	20,000
George Bruce,	10,000	Thos. Suffern,	20,000
Peter Scermerhorn,	10,000	J. Hooker, for self and others,	25,000
Benj. DeForest,	10,000		
W. W. DeForest,	6,000	Edward Jones,	5,000
Adam Norris,	15,000	A. C. Flagg,	4,000
C. V. S. Roosevelt,	5,000	Math Vassar,	10,000
Jas. H. Roosevelt,	3,000	W. A. Davies, for self and others,	14,000
Alex. Marven,	5,000		
J. B. Johnson,	2,500	G. B. Butler,	2,500
M. Van Schaick,	10,000	Ward & Co., for sundry persons,	150,000
Elisha Peck,	10,000		

Champlain and St. Lawrence Railroad Company.

At a half-yearly meeting of the Stockholders of the Company held January 15, 1849, at the Office of the Company,—

John Frothingham, Esq., was called to the Chair and Mr. W. D. Lindsay acted as Secretary.

John Molson, Esq., Chairman of the Committee of Managements, made the following

REPORT:

Gentlemen:—As Chairman of the Committee of Management of this Company, it becomes my duty, in accordauce with usage, to make the customary annual report ot the affairs of the Company for the past year. When it is considered that the year 1848 has been one of unexampled commercial distress, it is a source of gratification to me to be able to congratulate the Stockholders on the uninterrupted prosperity of this company; for whilst most public institutions have suffered considerable depression, ours has comparatively suffered little. This you will be enabled to judge of by the statements embracing the affairs of the various departments of our road, which I have the honor of submitting to you.

I have, therefore, with the sanction of the Committee, much pleasure in recommending that a dividend be declared of Four Pounds per share, payable on the first day of March next, out of the profits of the business,

In accordanee with the recommendations made by the Stockholders at the annual meeting last year, I am happy to inform you that T Rail has been purchased and laid on the remainder of our road for a distance of about eight and a half miles. This improvemement has been done in the most satisfactory manner, and completes the road in its whole extent, with the exception of a few unimportant improvements which remain to be done in the spring to put the road in perfect working order These can be effected at a very trifling expense.

On reference to the statements I have laid before you, you will not fail to remark that a large outlay has been incurred for the purchase of the iron rails, cars of various descriptions, additions and improvements to our wharves at Laprairie and St. Johns, a moveable storehouse on the wharf at Montreal, repairs to bridges and various other things, most of which being permanent improvements will require but little future outlay, except such as may be rendered necessary from an increase of our business. We have likewise in the couase of preparation for the ensuing season, other cars of various kinds, having reason to anticipate a considerable increase in our business, in consequence of the completion of the Saratoga and Whitehall railroad, which has been lately opened to the public.

This road now affords an uninterrupted line of communication between Montreal and New York, which, I have no reason to doubt, must and will conduce largely to the advantage of our company; more particularly as the owners of the steamboats on Lake Champlain, I am informed, are preparing to increase the number of their boats in order to establish a day and a night line across the lake. Having to keep pace with our neighbors from the United States, it became of imperative necessity not only that our road should be placed in a state to meet the wants of a growing trade, but on a footing equal to theirs.

To carry out the improvements which have been effected, involved a large outlay; and the Committee of Management, in order to meet this, felt it their duty to call in the remainder of the Stock, and also (with the concurrence of a special general meeting, convoked for the purpose) to create three hundred new shares, as permitted by our charter.

The gross amount of the receipts during the year amounted to £20,344 0s. 4d., showing a decrease on last year of £2,131 13s. 9d.

Although the result of our operations shows a decrease to that amount, I am happy to be enabled to state that this deficiency has been met by a reduction in our expenses to the extent of £983 14 11.

John Molson, *Chairman.*

The following gentlemen were elected the Committee of Management for the ensuing year:

B. Brewster, D. Finlayson,
J. Carter, Wm. Workman,
P. W. Dease, Sir George Simpson,
A. M. Delisle, John Molson,
Wm. McDonald.

At a subsequent meeting of this Committe, John Molson, Esq., was unanimously re-elected Chairman, and B. Brewster, Esq., Deputy Chairman, for the ensuing year.

ENGINEERS.

Arms, F. C.,
Georgia Railroad, Augusta, Ga.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Crocker, Wm. B.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. P.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

Minot, Charles,
Boston and Maine Railroad, Boston, Mass.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Nicolls, G. A.,
Philadelphia and Reading Railroad, Reading, Pa.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Robinson, James P.,
Androscggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

To Contractors.

Office of the Richmond & Danville Railroad Company,
Richmond, 22d Feb., 1849.

SEALED PROPOSALS will be received at this office until Monday, the 12th March next, for the construction of a STONE BRIDGE over the James River, for the Richmond and Danville Railroad.

Plans and specifications will be ready for examination at the office of the Company by the 6th proximo.

Where prices and responsibility are equal, a preference will be given to the offer wherein the largest amount of the Stock of the Company will be received in payment. ANDREW TALCOTT,
Chief Engineer.

BUSINESS CARDS.

James Laurie, *Civil Engineer,*
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, *Civil Engineer,*
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to DUDLEY B. FULLER, *Agent,*
139 Greenwich street.
New York, October 25, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., *Philadelphia.*

Railroad Iron.

1000 Tons T Rails, weighing about 60 lbs. to the yard, of the latest and most improved pattern, for sale by BOORMAN, JOHNSTON & CO.,
January 20, 1849. 6w

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, *Agents.*
17 Burling Slip, New York.
October 30, 1848.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Mount Savage Iron Works, Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.

3000 Tons, about 60 lbs. per lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by DAVIS, BROOKS & CO.,
68 Broad srteet.
New York, September 16, 1848.
Also on hand—1000 tons best quality Rails.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1848. New York.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.
All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes,* have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.
P. A. BURDEN, *Agent,*
Troy Iron and Nail Factory, Troy, N. Y.

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the *most improved Freight Cars.* We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SCHENECTADY LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

THE undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.
E. S. NORRIS.
February 24, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles,* and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving *Cotton, Woollen, or other Mills,* can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Plaining, Cutting and *Drilling Machines,* of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, *Agent.*

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to ¼ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.

Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

LOCOMOTIVE FOR SALE.
(NOW RUNNING.)

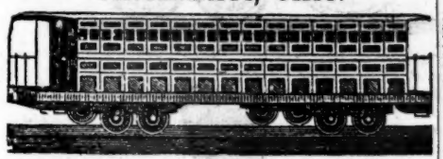
A Good Locomotive Engine and Tender in good running order, for sale low. Address
E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.
February 24, 1849. 4t.8

Direct Action Engines
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,
AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,
THOMAS PROSSER, C. E.
28 Platt street, New York.
May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1¼ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, *Patentee.*
☞ These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Norwich Car Factory,
NORWICH, CONNECTICUT.
AT the head of navigation on the River *Thames*, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of
RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES
Furnished and fitted at short notice.
Orders executed with promptness and despatch.
☞ Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,
Will meet with immediate attention. 1y8

CAR MANUFACTORY,
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848. 44tf

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,
SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and
SHAFTING FOR FACTORIES.
☞ *The above may be had at order at our Car Factory,*
REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
} SPRINGFIELD, MASS.
1y48

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats. Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.
The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.
ANDREW C. GRAY,
a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUfacturers of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.
When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.
THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.
It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.
Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.
Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

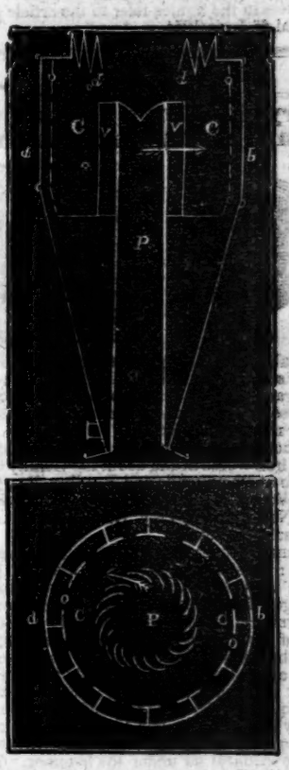
MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, *Patterson, N. J.* The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.
Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.
Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.
Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.
ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.
During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc. —and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.
They are permitted to refer to the following gentlemen:

Charles Cook, Nelson J. Beach, Jacob Hinds,	Canal Commissioners of the State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris,	Railroad Bridge Builders, Springfield, Mass.
Mr. Wm. Howe,	Engineer & Bridge Builder, Utica, N. Y.
Mr. S. Whipple,	

January 1, 1849.

FRENCH & BAIRD'S
Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.
Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.
These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo.power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

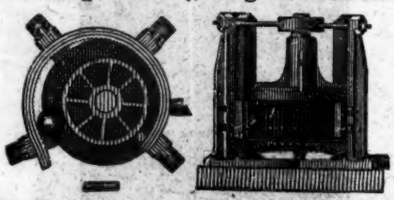
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the uantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

ALSO,

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by

ALLEN & NEEDLES,
No. 22 and 23 S. Wharves, near Chestnut St.,
Philadelphia.

February 24, 1849.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

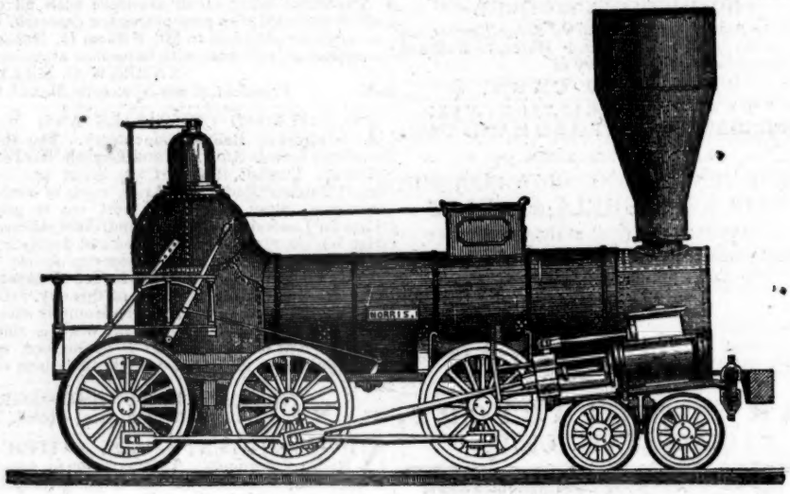
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds —including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

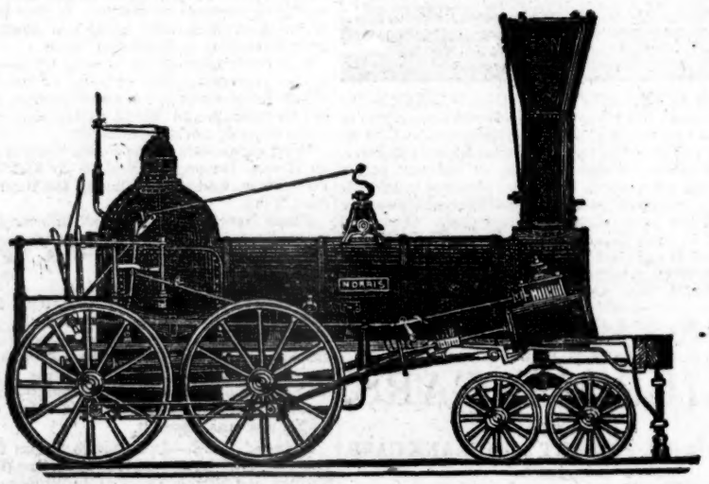
DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,





THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusunl advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

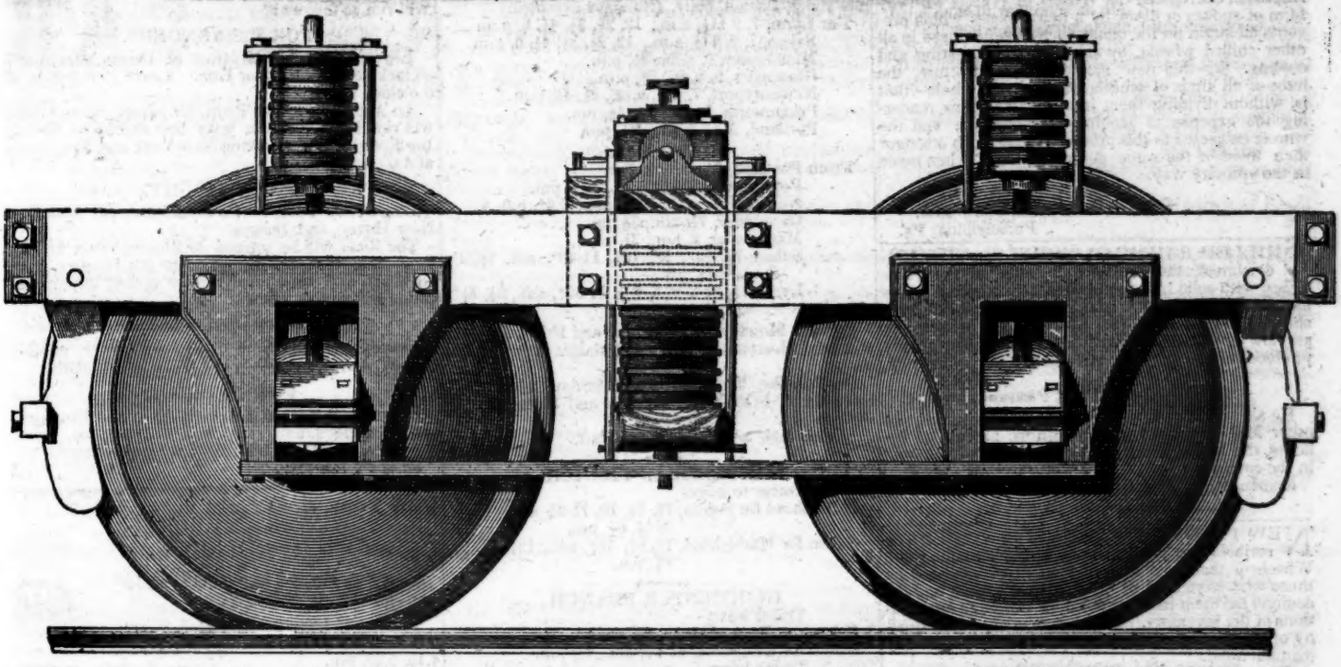
Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, *Agent*,
Office 99 State-street.

Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with
F. M. RAY, *Agent*,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street, below Walnut,
1y10 near Third, Philadelphia.

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The *beds* and *builds* of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be $2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of $3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to
JAMES HERRON,
Civil Engineer, Navy Yard.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNdersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.

Kensington, Philadelphia Co., }
March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUBscribers are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO.,
Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, OCTOBER 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm. Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 3½ pm. Leave Providence at 8½, a.m., and 3½, pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10½ pm. Leave Dedham at 7½, 10½, am., 1½, 4½, and 9 pm.

Stoughton Trains—Leave Boston at 11½ am., and 4½ pm. Leave Stoughton at 8½ am., and 2½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2½ pm.

Leave Worcester at 6½ and 10 am., and 4½ pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

☞ *Fares are Less when paid for Tickets than when paid in the Cars.* ☜

32 1y. S. H. P. LEE, Ju., Sup't.

EASTERN RAILROAD, WINTER ARRANGEment. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9, 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m., 3½, p.m.
Gloucester, 9, a.m., 3½, p.m.
Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
Portsmouth, 7, am., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,

From Portland, 7½, am., 3, pm.
Portsmouth, 7, 9½*, am., 5½*, pm.
Newburyport, 7½, 10½*, am., 2, 6*, pm.
Gloucester, 7½, am., 3½ pm.
Manchester, 8, am., 3½, pm.,
Salem, 7½, 8½*, 9*, 10½, 11-40*, am., 2½, 3*, 4½*, 7*, pm.
Lynn, 7½, 8½*, 9½*, 10½, 11-55*, am., 2½, 3½*, 4½*, 7½*, pm.

☞ On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train wil leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.

* *On or on their arrival from the East.*

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 8½, 10, 11-25, am. 2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, am., 4½, pm.
Salem for Gloucester at 9½, am., 4½, pm.
Trains leave
Gloucester for Salem at 7½, am., 3½ pm.
Manchester for Salem at 8, am., 3½ pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM to LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at	7.45, 9, am.,	12.45, 3.15, 6.45, pm.
Salem for North Danvers at	7.45, 9, am.,	12.45, 3.15, pm.
Salem for Lawrence,		9*, am., 3.15*, pm.
Danvers "		9.10, am., 3.15, pm.
North Danvers"		9.20, am., 3.35, pm.
Middleton "		9.30, am., 3.45, pm.
North Andover "		10, am., 4.20, pm.
South Danvers for Salem at	7.45, 8.45, 11.30, am.	2, 45.5, pm.
North Danvers "		8.20, 11.10, am., 1.40, 5.40, pm.
Middleton "		11, am., 4.30, pm.
North Andover "		10.35, am., 5.05, pm.
Lawrence "		10.30*, am., 5*, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Winter Arrangement.

Commencing Nov. 13, 1848

Trains leave Boston as follows, viz.: For Portland at 7 am. and 2½ pm.
Great Falls at 7 am., 2½ and 3½ pm.
Haverhill at 7 and 11½ am., 2½, 3½ and 5 pm.
Lawrence at 7, 9, 11½ am., 2½, 3½, 5, 6 pm.
Reading 7, 9 & 11½ am., 1½, 3½, 5, 6, 7½ & 10 pm.
Trains leave for Boston as follows, viz.: From Portland at 7½ am., and 3 pm.
Great Falls at 6½ and 9½ am., and 4½ pm.
Haverhill at 7, 8½ and 11 am., 3 and6½ pm.
Lawrence at 6½, 7½, 8½, 11½, am., 12½, 3½, 6½ pm.
Reading at 6½, 7, 7½, 9½, 11½ am., 1½, 3½, 7½, 9 pm.

MEDFORD BRANCH TRAINS.

From Medford at 6½, 8, 10½ am., 2, 4, 6, 9, pm.
From Boston at 7½, 9½ am., 12½, 2½, 5½, 6½, 10 pm.
The Depot in Boston is on Haymarket Square.

CHAS. MINOT, Super't.

Boston, Nov. 7, 1848.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains

will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghampton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.

January 1*st*, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

ON and after December 1st, 1848, the Cars will run

as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7 30 and 9 30 am., 12 m., 2, 4 15, 5 30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9 30 am., 4 15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7 30 and 9 30 am., 3 and 4 15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7 30 and 9 30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morisiana and Harlem at 7 20,8, 8 50, 10 am., 12m., 1 35, 3, 3 45, 5, 5 35 pm.
Fordham and William's Bridge at 7, 8 30, 9 50 am., 1 15, 3 25, 5 20 pm.
Hunt's Bridge at 8 20, am., 3 18 pm.
Underhill's Road at 8 10 am., 3 08 pm.
Tuckahoe at 8 05, 9 30 am., 3 05, 5 pm.
Hart's Corners at 7 55 am., 2 52 pm.
White Plains at 7 45, 9 10 am., 2 45, 4 40 pm.
Davis' Brook at 9 am., 2 35, 4 30 pm.
Pleasantville at 8 49 am., 2 20, 4 19 pm.
Mount Kisko at 8 30 am., 2, 4 pm.
Bedford at 8 25 am., 1 55, 3 55 pm.
Mechanicsville at 8 15 am., 1 45, 3 45 pm.
Purdy's at 8 05 am., 1 35, 3 35 pm.
Croton Falls, at 8 am., 1 30, 3 30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9 30, 11, 12, 2, 4, and 5 30, and from Morisiana and Harlem at 7 20, 8, 10, 12, 1 35, 3, 3 45, and 5 oclock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7 30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2 30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7 30 am. to Croton Falls, returning 1 30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7 40, and Morrisiania and Harlem at 8 o'clock am. d1

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3½ pm.
Arrives at	9 am. and 6½ pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12½ pm. & 8 pm.
Leaves York for Columbia at	1½ pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	$1 50
" Wrightsville	2 00
" Columbia	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg	$9
Or via Lancaster by railroad	10
Through tickets to Harrisburg or Gettysburg	3

In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at 5½ pm.
Returning, leaves Owning's Mills at 7 am.

D. C. H. BORDLEY, Sup't.
31 1y Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton. 271 miles.	Between Charleston, and Dalton. 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	$0 18	$0 28
2d class	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS,
44*1y Sup't of Transportation.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.

On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
Returning, leaves Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½, pm., Train from Cincinnati, and 2½, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia			$1 90
Do	do	Springfield	2 50
Do	do	Sandusky City	6 50
Do	do	Buffalo	10 00
Do	do	Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

☞ The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points $7, and 4 cents per mile for less distances.—Fare through to Wheeling $11, and time about 36 hours, to Pittsburgh $10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling $13, to Pittsburgh $12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare $1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.—1848.

Winter Arrangement.

December 4th.—Fare $4.

Leave Philadelphia 8 am., and 4 pm.
Leave Baltimore 9 am, and 8 pm.
Sunday—Philadelphia only at 4 pm.
" Baltimore only at 8 pm.

Trains stop at way stations. A second class car run with morning line only.

Charleston, S. C.

Through tickets Philadelphia to Charleston, $20.
Connecting lines to Charleston leave Philadelphia, at 4 pm. daily—leave Baltimore at 11½ pm. daily.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, $12.
" " Wheeling, 13.
All through tickets only sold at office Philad.

Wilmington Accommodation.

Leaves Philadelphia at 1½ and 4 pm.
Leaves Wilmington at 8 am., and 4 pm.
N.B.—Extra baggage charged for.

I. R TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

	Fares.	Miles.	No. 1.	No. 2
Between Phila. and	Pottsville,	92	$3.50 and	$3.00
" "	Reading	58	2.25 and	1.90
" Pottsville	"	34	1.40 and	1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight

Rate of Passage	$8 00. Freight—
On weight goods generally,	50 cts. per hundred
On measurement goods	13 cts. per cubic ft.
On brls. wet (except molasses and oil)	1 50 per barrel.
On brls. dry (except lime)	80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts. per hundred
On hhds. and pipes of liquor, not over 120 gallons	$5 00 per hhd.
On molasses and oil	$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily	$26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia	22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

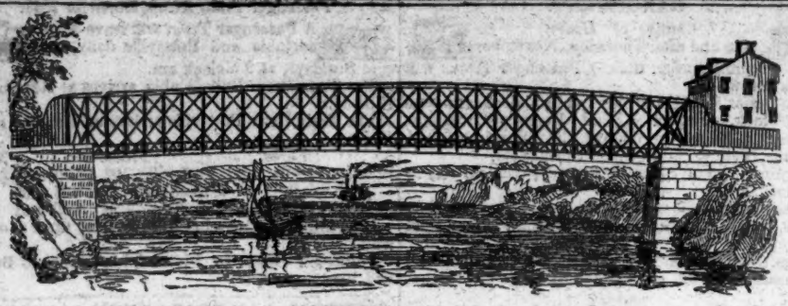
P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent*,
Albany Iron and Nail Works.

PATENT HAMMERED RAILROAD, SHIP & Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent*.
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, N. York; J. H. Whitney, do.; E. J. Etting, Philadelphia; William E. Coffin & Co., Boston.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch*, *Suspension* and *Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

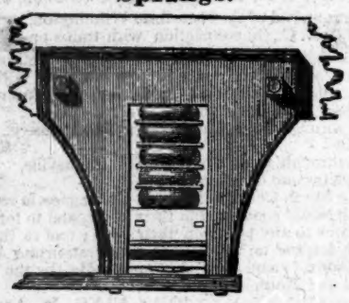
THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far *more economical* than the best wood structure, and on *certain conditions*, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74** BROADWAY, *up stairs*, or of W. RIDER & BROTHERS, **58** *Liberty Street*, where terms of contract will be made known, and where orders are solicited.

M. M. WHITE,
Agent for the Company.

November 25, 1848.

Fuller's Patent India-Rubber Springs.



THERE *can now be no ground of opposition whatever to these Springs.* The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but *a Patent has just been granted for an entirely new species of India Rubber*, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

This spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of *Machines*.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.
Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston adn Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[*From the Boston Advertiser of the 7th June*].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. *Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper.*"

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, *Civil Engineer*,
Pittsburgh, Pa.

These *Ropes* are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

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FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad* and *Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

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Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
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April 22, 1848. 1y*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of *Twenty years* has given him a knowledge and superior advantage in the business.

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☞ LETTERS and COMMUNICATIONS for this Journal may be directed to the *Editor*,

HENRY V. POOR, 54 WALL ST.